

REMARKS

In the Office Action mailed May 20, 2003, the restriction requirement was made final. The Information Disclosure Statements filed December 26, 2001 and filed November 22, 2001 were objected to. Sheet 1 of the drawings was objected to. Page 25 of the specification was objected to.

Claims 42 and 44-51 were rejected under 35 U.S.C. 112, first paragraph. Claims 42-51 were rejected under 35 U.S.C. 112, second paragraph. Claim 43 was said to contain allowable subject matter.

Information Disclosure Statements

The Office Action objected to the Information Disclosure Statements filed December 26, 2001 and November 22, 2001.

It is believed the objections to the Information Disclosure Statements refer to the crossed-out references in the PTO Form 1449s returned to Applicant with the Office Action mailed May 20, 2003, not to the entire PTO Form 1449s submitted and returned with the Office Action mailed May 20, 2003, which contain Examiner's initials and dates, indicating consideration of the initialed references by the Examiner (MPEP 609).

A Supplemental Information Disclosure Statement and PTO Form 1449 are submitted herewith, to incorporate the references crossed-out by the Examiner in the previously submitted PTO Form 1449.

It is believed that the citations listed on the Supplemental Information Disclosure Statement and PTO Form 1449 filed herewith conform to the requirements of 37 C.F.R. 1.98(a)(1) and (2). Consideration of the references and return of an initialed Form 1449 is hereby respectfully requested.

Objection to the Drawings

A replacement drawing sheet containing Fig. 1A and Fig. 1B is enclosed. The replacement drawing sheet contains the labels "Fig. 1A" and "Fig. 1B". It is believed the replacement drawing sheet overcomes the objections to the drawing sheet originally filed. Reconsideration of the objection is respectfully requested.

Objection to the Specification

In the Office Action mailed May 20, 2003, page 25 of the specification was objected to because of a typographical error. The Examiner is thanked for pointing out this inadvertent error. The typographical error has been corrected with the amendment to page 25 submitted herein.

Amendments to the Claims

Claim 42 has been amended to clarify the language. The amendments to claim 42 are supported by the specification and original claim 42 as filed. Claim 43 has been made independent, incorporating all limitations of claim 42, from which claim 43 originally depended. New claim 52 is added to specifically list the method of determining the presence of a deVries smectic A phase through the X-ray scattering technique. New claim 52 is supported by the specification as filed on page 12, lines 19-23. No new matter is added by any amendment, and all amendments are supported by the specification and claims as originally filed.

Rejection of claims 42 and 44-51 under 35 U.S.C. 112, first paragraph

Claims 42 and 44-51 were rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enablement requirement. The Office Action stated "Claim 42 recites a method which comprises the step of 'assaying' a material. The claim does not recite any other step in the method and is thus not a combination claim. Although the claim limitation uses the phrase 'step of' and not the phrase 'step for', the limitation is written as a function to be performed ... and does not recite sufficient acts

which would preclude application of 35 U.S.C. 112, sixth paragraph. When a step recitation does not appear in combination with another recited element of step, the claim is subject to an undue breadth rejection under 35 U.S.C., first paragraph."

In response, claim 42 has been amended to clarify the language. As amended, it is clear that a means-plus-function claim is not intended. The claim now recites the method step "determining the presence of a deVries smectic A phase in a chiral nonracemic liquid crystal material." In view of the amendment, the undue breadth rejection under 35 U.S.C. 112, first paragraph is believed moot. Reconsideration and withdrawal of the rejection is respectfully requested.

Rejection of claims 42 and 44-51 under 35 U.S.C. 112, first paragraph

Claims 42 and 44-51 were rejected under 35 U.S.C. 112, first paragraph "because the specification, while being enabling for assaying by making infrared dichroism measurements, does not reasonably provide enablement for any other method of assaying. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Clearly, one skilled in the art would have to experiment unduly to discern which assays are capable of determining the presence of the specifically recited material phase."

In response, it is noted the specification on page 12, lines 18-22 and page 13, last two lines through page 14, line 4, describes a well-known X-ray scattering technique to determine layer shrinkage as a function of temperature. "Layer shrinkage can be measured by observation of the layer spacing as a function of temperature using the well-known X-ray scattering technique, as described by Ricker et al. Phys. Rev. Lett. Vol. 59, 2658 (1987)." This reference was cited in the specification, cited on the PTO Form 1449 filed December 26, 2001 and the citation was initialed by the Examiner as considered on May 14, 2003. Little or no smectic layer thickness shrinkage at the SmA-SmC* phase transition as determined by the X-ray scattering

technique described shows the presence of a deVries smectic A phase, as described in the specification on page 15, lines 5-11: "The presence of a de Vries Smectic A phase directly above the Smectic C phase in temperature in bookshelf forming FLCs is consistent with and explains the observation of little or no layer shrinkage on transition from the 'Smectic A phase' to the Smectic C phase. Since de Vries Smectic A LC materials are already tilted in the Smectic A phase, these material exhibit very little or no smectic layer spacing change at the transition into the Smectic C phase (or on further cooling into the smectic C phase.) Little or no additional tilting occurs upon cooling of the material."

In view of the above, one of ordinary skill in the art would be easily able to determine if a liquid crystal material contains a deVries smectic A phase without undue experimentation using either infrared dichroism or X-ray scattering, as described in the specification and references cited therein, which references are incorporated by reference on page 19, line 9-10. Therefore, no undue experimentation is required to determine assays capable of determining the presence of the deVries smectic A phase. Reconsideration and withdrawal of the rejection is respectfully requested.

Rejection of claims 42-51 under 35 U.S.C. 112, second paragraph

Claims 42-51 were rejected under 35 U.S.C. 112, second paragraph. The Office Action stated: "the sole disclosed species of 'assaying' provided by the specification is application of infrared dichroism measurement (page 14). Accordingly, the specification does not support any distinction between the assaying of claim 42 and the passive making of infrared dichroism measurements of claim 43. Since the scope of an independent claim and a claim dependent upon it cannot be coextensive, and since it is not apparent what might and what might not constitute an assay under claim 42 other than the passively recited step of measuring infrared dichroism of claim 43, the claims are indefinite."

In response, it is noted that in addition to infrared dichroism, the specification recites the well-known X-ray scattering technique to determine layer shrinkage as a function of temperature, as described above. This X-ray scattering technique is used to determine if a deVries smectic A phase is present in a liquid crystal, as described above.

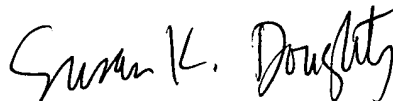
In view of the above arguments, the statement in the Office Action "the sole disclosed species of 'assaying' provided by the specification is application of infrared dichroism measurement (page 14)" is incorrect. There are at least two disclosed methods of "assaying" or determining if a liquid crystal material contains a deVries smectic A phase. Therefore, claims 41 and 42 are not co-extensive, since claim 42 discloses one specific method of determining if a deVries smectic A phase is present. Reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the above arguments and amendments, it is believed claims 42-52 are allowable. Reconsideration and withdrawal of all rejections and objections is respectfully requested. If there are any issues remaining to passage of the case to issuance, the Examiner is respectfully requested to telephone the undersigned.

This response is accompanied by a Petition for Extension of Time (three months). This response is also accompanied by a Supplemental Information Disclosure Statement and Form 1449, along with a replacement drawing sheet. It is believed fees of \$86.00 for one independent claim, \$180.00 for an Information Disclosure Statement and \$950.00 for a three-month extension of time are due with this submission. These fees are included with this submission. If these fees are incorrect, however, please charge any requisite fees or credit any overpayments to Deposit Account No. 07-1969.

Respectfully submitted,



Susan K. Doughty
Reg. No. 43,595

GREENLEE, WINNER AND SULLIVAN, P.C.

5370 Manhattan Circle, Suite 201
Boulder, CO 80303
Telephone: (303) 499-8080
Facsimile: (303) 499-8089
E-mail: winner@greenwin.com
Attorney docket No. 57-00
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